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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/636,154

08/07/2003

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06/14/2007

EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

06/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/636,154

Applicant(s)

WU ET AL.

Examiner

Ram N. Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,7,9,21,22,24-28 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,9,21,22,24-28 and 30-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/10/2007 has been entered.

Claim Objections

2. Claim 32 is objected to because of the following informalities: phrase "RF power" is repeated incorrectly in line 7. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4, 7, 9, 21-22, 24-28 and 30-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In this instance the limitation "single RF generator comprising a dual frequency system" in at least claims 1 and 32 is a new matter since every single RF generator produces power at single frequency.

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Further the limitation in claim 22 “ matching network electrically matches the RF power with a capacitor network comprising said plurality of variable capacitors” is a new matter since the matching network matches the RF power to the entire load on the other side of the matching network and not the capacitive network only.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4, 7, 9, 21-22, 24-28 and 30-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this instance the limitation “single RF generator comprising a dual frequency system” in at least claims 1 and 32 makes these claims indefinite since every single RF generator produces power at single frequency.

Further the limitation in claim 22 “ matching network electrically matches the RF power with a capacitor network comprising said plurality of variable capacitors” is indefinite since the matching network matches the RF power to the entire load on the other side of the matching network and not the capacitive network only.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 7, 9, 21-22, 24-28 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dible et al (US 6239403) in view of Liu et al (US 2003/0038112).

Dible et al disclose a method of controlling the RF power to a multi-segmented electrodes incorporated in an electrostatic chuck (Fig 2 and 5 and Col 2 lines 10-20) with a single RF power supply which delivers individually controlled power to different concentric electrode zones by controlling variable capacitors so as to have a localized control of plasma density in response to installed sensors (Abstract, Col 1 lines 7-14, Col 3 lines 32-47, Col 4 lines 19-25, Col 5 lines 37-58 and Col 6 lines 13-22) in order to have uniform processing (Abstract). Dible teaches impedance matching when applying an RF power (Col 1 lines 41-49) and teaches specific matching requirement for this method (Col 5 lines 16-36). Further, Dible et al teach that dual frequency generation of RF power (Col 1 lines 16-35) where the two frequencies may be combined for better process uniformity is known in the prior art.

Dible does not specifically disclose sensing spatial plasma density in order to control individual power to electrode segments.

Liu et al disclose a method of controlling the RF power to a multi-segmented electrode in a plasma chamber (Fig 1, 2A, 2B and 2C) with independent RF power supplies delivering individually controlled power to different concentric electrode zones, so as to have a localized control of plasma density in response to installed sensors (Abstract and Paragraphs 5-7, 27, 40, 42 and 81). Liu et al teach impedance matching when applying an RF power (Paragraph 7) and disclose uniformity of processing (Paragraph 15, 42, 68) and plasma uniformity (Paragraph 84).

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Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate plasma sensors in the apparatus of Dible et al for process and plasma uniformity or incorporate electrostatic chuck in the apparatus of Liu et al as conventional method of substrate chucking.

9. Claims 1-4, 7, 9, 21-22, 24-28 and 30-32 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Dible et al (US 6239403) in view of Liu et al (US 2003/0038112) and further in view of Strang (US 6642661).

Dible et al teach dual frequency generation of RF power (Col 1 lines 16-35).

Strange discloses dual frequency system where one frequency is applied to lower electrode and second frequency is applied to upper electrode.

Therefore having dual frequency system as per the teaching of Strange for its specific advantage would have been obvious to one of ordinary skill in the art at the time of invention.

Response to Arguments

Applicant's arguments filed 4/10/2007 have been fully considered but they are not persuasive in view of new grounds of rejection.

Without being specific, applicant has argued repeatedly against limitations clearly present in the prior art as disclosed. Similarly applicant's arguments against the combination of references is not understood.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar
Primary Examiner AU 1763